

**Before the
FEDERAL COMMUNICATION COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Unlicensed Operation in the TV Broadcast Bands)	ET Docket No. 04-186
)	
Additional Spectrum for Unlicensed Devices)	ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band)	

To: The Commission

Comments of Cavell, Mertz & Associates, Inc.

Cavell, Mertz & Associates, Inc. (“Cavell Mertz”) is a broadcast engineering consulting firm that has been in business for over 20 years. During that time it has provided consulting to a large number of broadcast stations, broadcast groups, as well as broadcast industry associations. Cavell Mertz files these comments in the above referenced proceeding in response to proposals from entities seeking to be designated TV Band Device Database Managers.

Introduction

Cavell, Mertz & Associates, Inc. (“CMA”) has utilized the FCC’s database as it has developed over the years, from its infancy in the days of the Broadcast Application Processing System “flat files” which were delivered periodically on magnetic tape, to its current incarnation in the form of the Consolidated Database System (“CDBS”) relational database.

Confidence in CDBS

Some time after the FCC’s databases became publicly available for download on a regular basis, CMA took the initiative to download the data and to develop a web-based search engine that brings together much of the otherwise widely-scattered data from CDBS, the Universal Licensing System (“ULS”), and other sources for use by broadcasters and others. In fact, because of its ease of use and its ability to bring together many different tables and databases into one result-set, our search engine (FCCInfo.com)

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has become a primary reference of FCC data for many professionals in the broadcast industry. Based on this experience with the FCC's databases in particular, we believe that we are qualified to make the following observations in relation to the proposed use of Television Band Devices ("TVBDs") and the protection of existing broadcast facilities.

As active users of the FCC's databases, it is our observation that the CDBS database has inherited characteristics that are likely remnants from the days when the information was maintained by hand and processed on paper. For example, we have encountered such undesirable anomalies as common data fields being located in more than one table, with different data in each location. Further, there are television stations with incorrect data records, such as a single facility having multiple licenses. It is vital to know how to work with these database nuances and anomalies in order to get correct results. This is the kind of data-handling and query management that will have to be dealt with when implementing the TVBD database as discussed in the recent *Report and Order* ("R&O")¹.

In 2002, the Association of Federal Communications Consulting Engineers ("AFCCE") petitioned the FCC to designate CDBS as the official source for broadcast station facility information. The current proposal represents the greatest dependence to date on CDBS which, despite the AFCCE petition, has not yet been declared "official". As proposed, this unofficial database would provide a means of both broadcast station protection and, effectively, frequency allocation for TVBD facilities. Because the TVBD frequency allocation process would operate unchecked by human intervention, CDBS data errors and misinterpretation have the potential to ravage the viewership of television stations. This is particularly true in the case of Low Power Television facilities whose weaker signals are prone to interference and whose coverage areas are already limited. To clarify, interference areas created by TVBDs extend well beyond their useful service areas (by as much as ten times). As discussed in further detail below, the use of CDBS, in its present form, will result in "mistakes" that can lead to devastating consequences.

¹ "SECOND REPORT AND ORDER AND MEMORANDUM OPINION AND ORDER" FCC 08-260, Adopted November 4, 2008, ET Docket No. 04-186.

Discussions in the proceedings to date have revolved primarily around the TVBD hardware in question and, in general, determining which licensed facilities require protection from the operation of unlicensed devices. Specifically, limitations have been imposed on TVBD operation to protect existing, licensed facilities, presuming that CDBS and ULS will provide the necessary data. The following discussion explores some of the data management issues related to CDBS and ULS. A number of issues and recommendations are brought up in the following discussion that may require either a policy adjustment or a Rulemaking to implement. It is believed that both TVBD users and incumbent television band services will benefit from most, if not all of the recommendations addressed herein.

CMA has been involved in recent preliminary discussions with FCC staff regarding the development of a new database that would replace CDBS, ULS, and other Commission databases. Our understanding is that the new database will be operational near the end of 2010. Ideally, the new database will not inherit any of the flaws contained in CDBS. It is hoped that the following discussion will not only shed light on the TVBD discussion at hand, but will assist with the planning and implementation of the new database as well. Otherwise, with CDBS in its current form, both licensed broadcasters and TVBD users will be underserved.

Example 1 – CDBS Archive Flag Error - Underprotection

In addition to containing records of current facilities, CDBS also contains historical records of facilities that haven't existed for many years. It is vital to be able to accurately differentiate "current" records from those that have been "archived". CMA regularly encounters "current" licenses that have incorrectly been marked as "archived" in CDBS. In the proposed database implementation, such a broadcast facility would receive inadequate interference protection from TVBD devices. At present, errors in CDBS do not cause interference because CMA and others have participated in correcting the data by notifying FCC staff. Usually, the information has been corrected within a week, well before the inaccurate data can cause harm in the existing allocations process.

However, if the database is to be used as the source for automatically allotting TVBDs, it would be necessary to not only correct data much more quickly, but to be able to update the TVBD database immediately as well.

Example 2 – CDBS Archive Flag Error - Overprotection

In addition to regularly under-protecting existing facilities, CMA has also encountered CDBS errors that over-protect spectrum and regions. For example, approximately six months after the DTV transition, CDBS still identifies many pre-transition facilities as “current” records. Protection of these phantom facilities would result in underutilization of spectrum by TVBDs.

Example 3 – CDBS Archive Flag Error – Overprotection

Another “over-protection” scenario is when CDBS shows more than one “current” license for a single facility. This occasionally happens when a new license is granted and the previous one does not get archived. CMA has also discovered old licenses that had once been archived but were inexplicably reset to “current”. While over-protection is less devastating than under-protection, it would be desirable to be able to have a formal process in place which permits quick corrective action, resulting in efficient use of spectrum.

Example 4 – “Operational” Status for “Dark” Stations

Although not specifically an error, CDBS omits certain data that would be useful in the allocation of TVBD frequencies. For example, licensees will sometimes notify the Commission that they have temporarily gone “dark” and will remain so for some period of time. According to FCC Rules, a licensed facility may remain dark for up to 12 months without losing its license. Because this notification is done in the form of a legal filing, this operational status information is not contained in the CDBS engineering data. For maximum utilization of spectrum, frequencies not in use by a dark facility logically should become available for TVBD use during the time that the facility remains

dark. Furthermore, TVBDs must promptly be notified when the broadcast facility becomes operational to assure requisite interference protection.

At present, facility records include construction permit applications, construction permits, license applications, licenses, and special temporary authorizations (“STAs”). Each of these may variously be expired, deleted, cancelled, modified, or reinstated. However, CDBS does not show an unambiguous status of which facility record is operational and therefore entitled to protection by TVBD devices.

Example 5 – “Operational” Status for “Expired” Stations

A special case exists in situations where the renewal of a television station license is contested. Such an occurrence routinely occurs when a special-interest group challenges whether a station is operating in the public interest. Such a challenge typically remains unresolved beyond the expiration date of the license term. Until the challenge is resolved, the television station remains operational, and is entitled to protection, despite having an expired license. This potential under-protection can be resolved by including an unambiguous “operational” status field to each facility record.

Example 6 – “Operational” Status for Program Test Authority

A similar situation exists following the construction of an authorized broadcast facility. At present, FCC Rules permit that following the construction of an authorized facility, many facilities may begin operation under Program Test Authority (“PTA”) as early as ten days before an Application for License is submitted. As an extension of this situation, depending on circumstances, it can take months before the final license is granted (note the number of operational post-transition DTV facilities still operating without a license grant). In the interim, the operational facility should be protected because it is actually on the air instead of the officially licensed facility. There should be only one protected operational facility per television station.²

² Distributed Transmission System (“DTS”) stations, an obvious exception, are discussed below.

Example 7 – “Operational” Status for Special Temporary Authorization

Another similar need exists for the incorporation of an “operational” status for Special Temporary Authorization (“STA”) facilities in CDBS. It could be argued that a facility operating under an STA should only be protected to the extent that it is actually providing service. In many cases, STAs are short-term solutions to providing something less than full service, while the licensee is dealing with a technical or logistical hurdle. Although STAs are granted for a term of 180 days, they are often extended beyond one term. During the DTV transition, many facilities were operated under STAs for several years.

In some cases during the DTV transition, only STA records remained to identify which broadcast channel was in use. STAs are also utilized for experimental authorizations that often serve the public interest and require protection from interference from TVBD devices. The TVBD database requires appropriate information to properly coordinate the efficient use of spectrum without causing unwanted interference to authorized facilities.

Further, some STA engineering data is lacking from CDBS. Under certain circumstances, a “legal” STA is submitted in lieu of an “engineering” STA. Unlike “engineering” STAs, which facilitate easily-extracted technical data, the technical data from “legal” STA facilities does not appear in CDBS, resulting in no protection to these facilities. Occasionally, the operation of an STA facility will be granted for an alternate channel, or for a region that is not included in the underlying license, due to special circumstances. In these cases, the STA *must* be protected from the operation of TVBDs.

Example 8 – Distributed Transmission Systems

Distributed Transmission Systems (“DTS”) represents a departure from the normal handling of a television facility in a number of ways. Unlike a standard television station that operates with a single transmitter facility, DTS stations utilize multiple broadcast facilities to provide coverage over a large region.

In the context of “operational” status, we propose that each DTS transmitter facility should have a unique “operational” status. This would be an exception to the one operational status per television station recommendation stated above.

Timely Updates

There are circumstances, such as the issuance of STAs and PTAs discussed above, when changes in facility operations materially alter the interference protection landscape. Because updates to the publicly accessible CDBS data are provided once daily, and TVBDs are required to contact their database daily, pertinent data may take two days to propagate to the TVBDs. In the case of a license grant dated mid-day on a Friday, the necessary protection information would not be available until the following Monday, after which the relevant TVBDs may not acknowledge the change until they contact the database as late as Tuesday. Because 48 hours or more of interference is unacceptable, timeliness of data updates is another area that should be addressed.

While publicly available CDBS data is typically exported five times a week, new ULS data is currently made available daily in incremental form with new data, and once per week with full data. In order to identify changes in protection in a timely manner, it would be desirable to specify use of the daily ULS updates.

Ideally, the TVBD database should be imported daily from the usual FCC data export, then updated in real-time from the FCC’s database utilizing a secure RSS type of feed – or equivalent. Such a system would allow new changes in authorization to propagate into the TVBD database within an hour. Also, since the TVBD database is required to track its contacts with individual devices, it makes sense to require a method to “push” these relevant changes in channel availability to unlicensed devices. Since each device’s function is presumably to provide internet data to mobile users, the necessary internet connection and bandwidth will be available to contact each device almost at a moment’s notice. We recognize that the recommendations contained within this paragraph represent much more than a simple policy shift, but we believe nevertheless that the recommendation herein should be seriously considered.

Data Import Hazards

Until now, most of the focus of this paper has been on the hazards involved with the interpretation of the data available, particularly as it relates to the automated process proposed to allocate available spectrum to unlicensed devices. However, our experience with the data import process suggests a number of areas where the data import process itself could also result in even greater protection difficulties than those discussed above.

It is our position that due to the size of the databases involved, and the many sources of the data, including the human element, errors and other variables *will* take place under the best of circumstances. While some of the issues discussed previously and in the following paragraphs might be improved with new procedures or policies, it is inevitable that errors will be a part of the system. We believe that it will be necessary to implement methods or procedures in the data export and import process that will provide a much higher degree of data reliability than has been experienced to date.

Example 9 – Data Export Consistency in Formatting

Over the years that CDBS data has been available for download, the time of day that the data has been available has varied significantly. We recommend that the coordination of the data export and import process will be fundamental to the accurate protection of licensed facilities. It has been our observation at CMA that the CDBS data export has not always been consistent regarding the use of the end-of-line delimiter. We recommend that a process be put in place which would ensure a consistent export format.

Review and Recommendations

Following is a bulleted summary of the recommendations derived from and contained in the discussion above:

1. We recommend that CDBS be identified as the official source for broadcast station facility information.
2. We recommend that a more formal process be established for quickly reviewing and correcting data in CDBS or ULS.
3. We recommend that an internal review of the “current” versus “archive” flag process by database managers be conducted.

4. As demonstrated above, other authorizations besides licenses require protection. We recommend that protection of more than just licenses will be necessary to provide adequate facility protection, and efficient allocation of spectrum for TVBD use.
5. As an extension of the above, it may be necessary to provide a Ruling as it relates to protection of “dark” or STA facilities, which would otherwise represent an underutilization of spectrum.
6. We recommend that an “operational” status be implemented in CDBS, which will identify the facility to protect, whether it is a License, Construction Permit, or even an STA.
7. We recommend that “legal” filing information should be reflected in the engineering data to a greater extent than it is today (see the example discussions of “dark” and legal STA filings).
8. We recommend that changes be implemented, which will make the daily data export more reliable and consistent. This might include a process whereby interested parties, including the TVBD database administrator, will know when new, complete data is available for download.
9. We recommend that daily updates of new data from ULS should be specified instead of the weekly exports currently employed by many.
10. We recommend that an RSS feed of new grants be implemented, which will permit more timely protection of the incumbent television band services.
11. We also recommend implementing a process of “pushing” new channel change information to a specific region or device.
12. We recommend that a data export specification be implemented, which will *enforce* a uniform, reliable export of data. This includes, but is not limited to, the ULS data export, which contains a number of anomalies that make the data import questionable.
13. We recommend that a company or organization outside of the FCC and the TVBD database administrator be assigned the task of overseeing or reviewing the FCC data filtering as a means to represent the interests of the incumbent television band services.

Summary and Conclusion

As indicated in the introductory text, the above discussion is not intended to be inflammatory or even complete. It is a realistic listing of highlights and insights of some of the issues CMA has found it necessary to deal with over the years before we could expect a reliable data import, as well as some of the issues we see as necessary before the FCC moves into the arena of automatically allocating spectrum on a moment-by-moment basis. We believe that as the ULS and CDBS database stands today, the task of

efficiently allocating spectrum is within reach, but will require some adjustments which have not been part of the discussion to date. Some changes proposed herein may be easily accomplished with a policy change within the FCC, while others would require the additional step of a Rulemaking. We also believe that someone outside of the FCC or TVBD database administrator should be a part of the final TVBD database solution, who will assist with the data "filtering" and represent the protection needs of the current licensees of the television broadcast spectrum.

While the sensing technology of the TVBD is expected to backstop the occasional database deficiency, the FCC has acknowledged that sensing alone provides no guarantee that population within the service contour of incumbent facilities will not receive unwanted interference (See R&O, footnote 73, p 23). Considering this potential failure of the sensing technology in TVBDs, it is necessary to implement the supporting database infrastructure in such a way as to minimize inappropriate responses to a channel search request for a specific location. As described above, without a number of changes in policy, and possibly even Rules, the likelihood of the proposed TVBD allocation system causing unwanted interference is high. It is our considered opinion that most, if not all, of the above recommendations must be addressed before the implementation of the TVBDs can be expected to have a minimal impact on the incumbent services.

Respectfully Submitted,



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